
INITIAL SITE RESPONSE PLAN

**SANDIA
NATIONAL LABORATORIES**



**SANDIA NATIONAL LABORATORIES
MANAGEMENT RESPONSE PLAN
FOR THE
CHEMICAL SAFETY VULNERABILITY FIELD ASSESSMENT**

Introduction

A Chemical Safety Vulnerability Review of Sandia National Laboratories, New Mexico (SNL/NM), was conducted by the Department of Energy during the period of May 16 through May 25, 1994. The draft Field Verification Report was issued May 25, 1994. The review "determined that hazardous materials are being stored and handled in accordance with SNL/NM corporate procedures and applicable standards," but identified three potential vulnerabilities. The vulnerabilities were:

- *Inadequate integrated work control of maintenance and construction activities in multiuser facilities.*
- *Weaknesses in, and lack of, integration among SNL/NM programs for identifying, characterizing, and mitigating chemical hazards.*
- *Inadequate configuration management in aging laboratory facilities.*

This management response plan will address the issues raised by the vulnerabilities noted and will improve the safety and work processes at the laboratories. A description of the vulnerability, the planned management action, and the estimated schedule are included for each of the vulnerabilities.

Response Summary

The first vulnerability, inadequate integrated work in multiuser facilities, was determined to stem from there being no responsible individual who is cognizant of and controls all facility operations and maintenance activities. The management action to improve this vulnerability is to develop a "Zone Management" process to establish a clearcut ownership structure. Sandia has created a team which will work with the Sites Operations Director to develop this process.

The weakness and lack of integration of SNL/NM programs for identifying, characterizing, and mitigating chemical hazards result from the immaturity of several SNL/NM processes and needed refinement of other processes. Eight processes and procedures have been identified for improvement by continuing several existing actions and initiating other planned actions.

A lack of configuration management in older facilities has resulted in gradual degradation of essential building systems. A risk-based Configuration Management System is being initiated to mitigate this vulnerability. A team has been formed to develop a program plan and a specific implementation plan. The team will follow Department of Energy (DOE) Standard 1073-93 as a guide. Ownership of the Configuration Management System will be assumed by the Sites Operations Center.

**Chemical Safety Vulnerability Review
September 1994**

Site/Facility: Sandia National Laboratories
Point of Contact: Sites Operations Management Center, 7300

Vulnerability Number: CSVN-SNL/NM-FM-01

Vulnerability:

- Inadequate integrated work control of maintenance and construction activities in multiuser facilities.

Summary of Vulnerability:

- In multiuser facilities, the presence of several operations, confusion over responsibilities, and one group's actions may inadvertently impact another group. In these multiuser facilities, there is no responsible individual who is cognizant of and controls all facility operations and maintenance activities. This results in a lack of integration of work control and does not ensure that chemical-related work procedures are applied uniformly and are well-coordinated.

Response:

- Integration of work control of maintenance and construction activities in multiuser facilities must have, as a fundamental prerequisite, defined ownership of the facilities that is clear, unambiguous, and known to all.

Ownership must be based on the most stable foundation Sandia has, and the most unchanging entity in the Sandia framework is real property. Real property boundaries are precise, permanent, and can be clearly drawn, easily marked, and readily understood. Once defined, real property is unambiguous.

We believe that a system of "Zone Management" is the best method for constructing an unambiguous ownership structure. Integration of maintenance activities, storage, property control, and similar activities with ongoing operations and activities within a facility is the primary purpose for establishing the Zone Management Concept. In this system, specific individuals are assigned full-time management responsibility for specific, clearly defined areas. It is important to point out that this approach is conceptual. However, preliminary work causes us to believe it is the proper approach to the ownership problem which is at the root of many integration problems. Sandia is pursuing the Zone Management concept and has created a team to work under the leadership of the Sites Operations Director to fully develop this ownership concept.

Estimated Cost:

\$250 K

Funded in current FY94 and FY95 budgets.

CHEMICAL SAFETY VULNERABILITY REVIEW

Site/Facility: Sandia National Laboratories

Vulnerability Number: CSVN-NSL/NM-FM-01

Vulnerability	Task/ Step No.	Action/Product	Completion Date	Responsible Organization
<p>In multiuser facilities, the presence of several operations, confusion over responsibilities, and one group's actions may inadvertently impact another group. In these multiuser facilities, there is no responsible individual who is cognizant of and controls all facility operations and maintenance activities. This results in a lack of integration of work control and does not ensure that chemical-related work procedures are applied uniformly and are well-coordinated. Overall, eight service organizations from different research and matrix support groups were identified, each of which may be involved with maintenance functions in a single facility. While these organizations each have their own effective safety procedures, their approaches to work control varied. There was no clear indication that work is being controlled in a fully integrated manner to ensure chemical safety. As a result, there is a potential that maintenance or construction activities in one area of an equipment room may adversely affect activities in another area of that space. This may lead to inadvertent exposure of workers to hazardous chemicals or the compromising of safety equipment integrity. This vulnerability was prioritized as one which could result in short-term consequences of medium severity.</p>	1	Presentation of the Zone Management concept to the Sandia Line Implementation Working Group.	8/31/94	<p>Sites Operations Management Center, 7300</p>
	2	Fully define roles and responsibilities and prepare Job Descriptions for Zone Managers.	9/30/94	
	3	Present Zone Management Plan to Senior SNL management.	10/31/94	
	4	Fully develop and implement Zone Management Plan.	12/31/95	

CHEMICAL SAFETY VULNERABILITY REVIEW
September 1994

Site/Facility: Sandia National Laboratories
Point of Contact: Sites Planning and Integration Center, 7200

Vulnerability Number: CSVN-SNL/NM-MO-02

Vulnerability:

- Weaknesses in, and lack of, integration among SNL/NM programs for identifying, characterizing, and mitigating chemical hazards.

Summary of Vulnerability:

- SNL/NM has not implemented integrated and effective programs for identification, analysis, and mitigation of all chemical hazards. The SNL/NM hazard analysis processes are sometimes inadequate because the level of rigor applied is not appropriate for the level of hazard present. The facility maintenance and design engineering processes do not ensure a level of safety review, approval, and testing that is commensurate with the consequences of failure or the risk involved. Emergency preparedness sector plans vary in quality and usefulness in a manner that does not necessarily correlate to the hazards present. These conditions may result in unrecognized hazards, less than adequate engineering and administrative controls, and a decreased capacity to respond to emergency situations.

Response:

The hazards identification, analysis, and mitigation processes and procedures for chemicals and other hazards will be improved through continuing several existing actions and initiating other planned actions. These activities include the following: (1) qualification and training criteria for ES&H Coordinators and Zone Managers will be developed, to include identification of chemical hazards and requirements for worker protective measures; (2) Chapter 13, "Risk Management," of the Environment, Safety, and Health (ES&H) Manual will be extensively revised to define an integrated risk management methodology which will cover the entire life-cycle of an operation, facility, or idea and to provide supplemental guidance on the preparation of safety documents; (3) a comprehensive strategy for integrating hazard-related information, analyses, and reports across all Sandia sites and facilities will be created, allowing management to obtain a comprehensive view of facility hazards; (4) the Preliminary Hazards Assessment (PHA) and preliminary Hazards Classification processes will be revised to ensure that chemical hazards are adequately assessed according to criteria established in Industrial Hygiene and that the hazard classification process incorporates worker safety issues; (5) an online capability for collecting hazard-related information by facility and for applying the graded approach to determine the necessary level of safety analysis will be established and prototyped for at least one SNL facility; (6) at least one Sandia Center will evaluate the methods developed to revise the PHA and PHC processes; (7) all Sandia facilities will be reviewed against DOE 5481.B hazard classification levels and emergency response planning criteria and guidance, and a schedule for revising safety documentation and Emergency Preparedness Sector Plans based on the level of hazard present will be developed; and (8) The configuration management, maintenance management, design engineering, and self-assessment processes will be integrated into the overall management of risks at Sandia. The Sandia facility used to prototype the online capability for collecting hazard information will be selected in cooperation with Sandia's Industrial Hygiene Department. The methods to

revise the PHA and PHC classification processes will be evaluated by at least one Sandia Center by March 1995. This is the responsibility of the Risk Management and NEPA Department.

Estimated Cost:

\$1.9M

FY94 and FY95 actions are funded.

CHEMICAL SAFETY VULNERABILITY REVIEW

Site/Facility: Sandia National Laboratories

Vulnerability Number: CSVN-NSL/NM-MO-02

Vulnerability	Task/ Step No.	Action/Product	Completion Date	Responsible Organization
SNL/NM has not implemented integrated and effective programs for identification, analysis, and mitigation of all chemical hazards. The SNL/NM hazard analysis processes are sometimes inadequate because the level of rigor applied is not appropriate for the level of hazard present. The facility maintenance and design engineering processes do not ensure a level of safety review, approval, and testing that is commensurate with the consequences of failure or the risk involved. Emergency preparedness sector plans vary in quality and usefulness in a manner that does not necessarily correlate to the hazards present. These conditions may result in unrecognized hazards, less than adequate engineering and administrative controls, and a decreased capacity to respond to emergency situations; thereby, potentially increasing both the probability and severity of accidents involving chemicals. This vulnerability was prioritized as one which could result in short- to long-term consequences of medium severity.	1	Define ES&H Coordinator and Zone Manager qualification and training.	8/31/94	Sites Planning and Integration Center, 7300
	2	Revise Chapter 13, ES&H Manual.	10/31/94	
	3	Develop a hazard information integration strategy.	12/31/94	
	4	Revise PHA and PHC processes to reflect Industrial Hygiene criteria for initiating job analyses and worker protective measures.	12/31/95	
	5	Demonstrate an online capability for at least one SNL facility designated by the Industrial Hygiene Department to collect hazard-related information at SNL/NM.	1/31/95	
	6	At least one Sandia Center will evaluate methods developed to revise the PHA and PHC processes.	3/31/95	
	7	Review SNL facility hazards and determine required safety and emergency response planning documentation.	6/30/95	
	8	Integrate configuration management, maintenance management, design engineering, and self-assessment processes with risk management processes.	9/30/97	

CHEMICAL SAFETY VULNERABILITY REVIEW
September 1994

Site/Facility: Sandia National Laboratories
Points of Contact: Sites Operations Management Center, 7300
Facilities Development Center, 7900

Vulnerability Number: CSVN-SNL/NM-FM-03

Vulnerability:

- Inadequate configuration management in aging laboratory facilities.

Summary of Vulnerability:

- Inadequate configuration management in an aging SNL/NM, hazardous-chemical-containing, laboratory complex has resulted in the gradual degradation of essential utility and ventilation systems. These systems were reported to be operating at, or slightly beyond, maximum design capacities, to be experiencing a higher than normal breakdown incidence rate, and to be a contributing cause of suspect indoor air quality issues. The chemical research laboratories undergo many small-scale modification projects, which, typically, do not provide sufficient funding for full system engineering evaluations during the design phase. The problem is exacerbated by the many independent tenant organizations attempting to exert control over portions of these buildings without a responsible individual who is cognizant of all facility operations and maintenance activities.

Response:

- SNL concurs that configuration management is lacking, particularly in our older facilities. An improved Configuration Management System will be an important tool for the Zone Managers, referred to in the management action for Vulnerability 1 above, and for the general application in the overall Zone Management System. Configuration management improvements need to be developed in parallel with the Zone Management System, though it is likely that Zone Management will be implemented before a Configuration Management System is fully implemented.

A team has been formed to initiate development of a Configuration Management System. The current objective of this team is to provide a program plan and specific implementation plan to this end. A specific schedule for this objective will be prepared in August 1994. Utilizing DOE Standard 1073-93 as a guide, this team will provide the framework for a Configuration Management System and develop organizational responsibilities necessary to implement the program. Responsibility for development of the Configuration Management Program resides with the Facilities Development Center. Ownership of the Configuration Management System, once developed, will be assumed by the Sites Operations Center. This Configuration Management System, working through the Zone Management System, should greatly alleviate, if not eliminate, the problems identified in this vulnerability.

A risk-based Configuration management System will be developed and implemented to ensure that high, medium, and low risk and general use structures, system, and components (SSC) are identified, operated, and maintained to ensure the continued protection of people, property, and the environment during the useful life of the system.

The following actions will be taken: (1) conduct a review of the indoor air quality systems operations that exist in Buildings 805, 806, and 807; (2) compile recommendations to resolve any problems identified in the review just mentioned; (3) identify facilities with chemical exhaust systems greater than 5 years old, using existing industrial hygiene records; (4) test the exhaust systems in those identified facilities to ensure that performance meets usage requirements, curtailing operations and effecting corrections where performance fails to meet usage requirements; (5) review the maintenance records of the exhaust systems identified in the third action above and determine if trends exist which indicate that components (motors, blowers, switches, etc.) should be replaced or serviced more frequently than now scheduled; and (6) review and modify, if needed, the Sandia Facilities Design Manual to ensure that system engineering/evaluations of local ventilation and building HVAC systems are considered when projects require either new systems or modifications to local ventilation and building HVAC systems.

We recognize that building complex 805, 806, and 807 is one of our older facilities and is a prime example of this vulnerability. Immediate action was taken to alleviate the ventilation issue in this complex as evidenced in paragraph 1 of the letter from M. Lynn Jones, Vice President, Laboratories Services Division to Kathleen A. Carlson, Area Manager, DOE/KAO, subject: Progress Report on Issues Requiring Immediate Response from the Chemical Safety Vulnerability Review Field Verification, dated June 3, 1994. In addition, in the near future, many of the occupants of these buildings will relocate to new facilities, the Integrated materials Research Laboratory (IMRL) and the Explosives Component Facility (ECF). Sandia will assure that the enduring documentation accurately reflects the as-built state and that proposed changes are evaluated for possible impact on the environment and the health and safety of our employees, thus preventing problems now existing in the 805, 806, 807 complex.

Estimated Cost:

\$130K

FY94 and FY95 actions are funded. Steps 10-16 funding will be determined on a facility-by-facility basis.

CHEMICAL SAFETY VULNERABILITY REVIEW

Site/Facility: Sandia National Laboratories

Vulnerability Number: CSVN-NSL/NM-FM-03

Vulnerability	Task/ Step No.	Action/Product	Completion Date	Responsible Organization
<p>Inadequate configuration management in an aging SNL/NM, hazardous chemical-containing, laboratory complex has resulted in the gradual degradation of essential utility and ventilation systems. These systems were reported to be operating at, or slightly beyond, maximum design capacities, to be experiencing a higher than normal breakdown incidence rate, and to be a contributing cause of suspect indoor air quality issues. The chemical research laboratories undergo many small-scale modification projects, which, typically, do not provide sufficient funding for full system engineering evaluations during the design phase. The problem is exacerbated by the many independent tenant organizations attempting to exert control over portions of these buildings without a responsible individual who is cognizant of and controls all facility operations and maintenance activities. As a result, there is a significant potential for the exposure of laboratory personnel to hazardous chemicals when essential ventilation and other support equipment fails in service. This vulnerability was prioritized as one which could result in short-term consequences of medium severity.</p>	1	Complete review of Buildings 805, 806, and 807's indoor air quality systems operations.	7/15/94	<p>Sites Planning and Integration Center, 7300; and Facilities Development Center, 7900</p>
	2	Complete compiling recommendations to resolve any problems identified in the review mentioned in milestone 1.	7/31/94	
	3	Identify facilities with chemical exhaust systems greater than 5 years old.	10/31/94	
	4	Complete testing of exhaust systems greater than 5 years old.	12/31/94	
	5	Complete the review of maintenance records of exhaust systems greater than 5 years old.	12/31/94	
	6	Complete the review and modifications, as required, of the Sandia <i>Facilities Design Manual</i> .	12/31/94	
	7	Complete schedule for developing program and implementation plans.	9/2/94	
	8	Develop the Configuration Management Program Plan. This will establish requirements for each risk level (high, medium and low risk and general use) of a facility.	3/31/95	

CHEMICAL SAFETY VULNERABILITY REVIEW

Site/Facility: Sandia National Laboratories

Vulnerability Number: CSVN-NSL/NM-FM-03

Vulnerability	Task/ Step No.	Action/Product	Completion Date	Responsible Organization
	9	Review current Configuration Management for SNL high risk facilities, i.e., review the ongoing process in the SNL reactor area. Document gap analysis between current practices and Configuration Management Program Plan.	11/24/95	Sites Planning and Integration Center, 7300; and Facilities Development Center, 7900
	10	Establish procedures and processes for Configuration Management in high risk facilities.	3/29/96	
	11	Prototype Confirmation Management for a medium risk facility.	10/25/96 6/27/97	
	12	Establish procedures and process for Configuration Management in medium risk facilities.	3/28/97 3/27/98	
	13	Prototype Configuration Management for low risk facility.	6/27/97	
	14	Establish procedures and processes for Configuration Management in low risk facilities.	6/26/98	
	15	Prototype Configuration Management for general use facility.		
	16	Establish procedures and processes for Configuration Management in general use facilities.		